What is claimed is:

1. A tape drive system, comprising:

a stationary base;

at least one guide projection mounted to the stationary base; and

a receiver for receiving a tape cartridge and transporting the tape cartridge from an ejected position to a loaded position, the receiver comprising at least one guide slot mating with one of the guide projections, each guide slot being shaped to allow the receiver to move a first distance in a horizontal direction and a second distance in a vertical direction.

2. The system of claim 1, further comprising:

at least one receiver projection provided on the receiver; and

at least one linearly moveable actuator comprising at least one cam engaging at least one receiver projection such that as the actuator moves horizontally, each cam engages one of the guide projections to effect movement of the receiver.

3. The system of claim 2, wherein:

each guide slot is shaped to have a horizontal region and a vertical region; and

each cam engages one of the receiver projections to drive the receiver to move first in the horizontal direction until the receiver travels the first distance and then in the vertical direction until the receiver travels the second distance.

4. The system of claim 2, wherein each of the stationary guide projections comprises a pin.

5. The system of claim 4, wherein the guide slot comprises a polymer.

6. The system of claim 2, further comprising a rotating drive shaft for driving the actuator.

7. The system of claim 2, further comprising:

a second stationary guide projection mounted to a side of the stationary base opposite the first stationary guide projection; and

wherein the receiver comprises:

a top portion;

a first side and a second side opposite the first side, the first and second sides each comprising at least one receiver projection and at least one guide slot mating with one of the guide projections.

8. The system of claim 3, wherein each cam comprises a ramp such that as the cam engages the receiver projection to drive the receiver to move the first distance in the horizontal direction, the receiver projection remains in static contact with a beginning of the ramp, and as the cam engages the receiver projection to drive the receiver to move the second distance in the vertical direction, the receiver projection slides along the ramp.

9. The system of claim 8, wherein the actuator further comprises a clamping member configured to retain the receiver in the loaded position.

10. The system of claim 9, wherein the clamping member is provided at an end portion of the ramp.

11. The system of claim 2, further comprising:

a brake release lever comprising a body portion and a pivot portion rotatably coupled to the actuator and engaging a stationary member such that as the actuator moves horizontally, the pivot portion of the brake release lever translates horizontally while a distal end of the body portion of the brake release lever translates horizontally and vertically.

12. The system of claim 11, wherein the stationary member comprises the stationary guide projection.

13. The system of claim 12, wherein the body portion of the brake release lever further comprises:

an angled slot having the stationary guide projection received therein, the slot being shaped such that as the brake release lever moves horizontally, the stationary member travels through the slot to thereby translate the distal end of the brake release lever vertically.

14. The system of claim 13, wherein the brake release lever further comprises:

a finger provided at the distal end of the brake release lever, the finger being configured to enter a brake release aperture in a tape cartridge received in the receiver as the brake release lever translates vertically.

15. The system of claim 2, further comprising:

a reel driver for mating with a cartridge reel in a tape cartridge inserted into the receiver; and

a brake release for releasing a brake in the tape cartridge prior to the cartridge reel being mated with the reel driver.

16. The system of claim 2, further comprising:

a spring applying an upward force on the receiver in the vertical direction.

17. The system of claim 16, wherein the spring and the receiver are configured such that the spring applies a variable upward force on the receiver.

18. The system of claim 17, wherein:

the spring comprises a torsion spring coupled to the receiver, the torsion spring having a spring axis and an elongated spring arm extending from the spring axis and applying a force onto a spring contacting member of the actuator at a contact point along the spring arm; and

the spring arm and the spring contacting member are positioned such that as the receiver moves to vertically to the loaded position, the contact point moves closer to the spring axis, thereby increasing the force applied by the spring arm onto the spring contacting member.

19. A method of loading a tape cartridge into a tape drive system having a stationary base and at least one guide projection mounted to the stationary base, comprising:

receiving a tape cartridge in a receiver having at least one guide slot having a first portion and a second portion; and

moving the receiver from an ejected position to a loaded position by:

passing the guide projection through the first portion of the guide slot to move the receiver a first distance in a horizontal direction; and

passing the guide projection through the second portion of the guide slot to move the receiver a second distance in a vertical direction.

20. The method of claim 19, wherein the moving the receiver from the ejected position to the loaded position comprises:

linearly translating an actuator having at least one cam;

engaging the at least one cam with the receiver such that linear movement of the actuator causes movement of the receiver.

21. The method of claim 20, wherein the linearly translating the actuator comprises:

rotating a drive shaft;

engaging an actuator gear on the drive shaft with a gear on the actuator to linearly translate the actuator.

22. The method of claim 20, wherein the engaging the cam with the receiver comprises:

engaging the at least one cam with the receiver such that each cam engages a receiver projection on the receiver to drive the receiver to move first in the horizontal direction until the receiver travels the first distance and then in the vertical direction until the receiver travels the second distance.

23. The method of claim 22, wherein:

the engaging the at least one cam with the receiver such that each cam engages the receiver projection on the receiver to drive the receiver to move first in the horizontal direction until the receiver travels the first distance comprises statically engaging the cam with the receiver projection; and

the engaging the at least one cam with the receiver such that each cam engages the receiver projection on the receiver to drive the receiver to

move in the vertical direction until the receiver travels the second distance comprises slidably engaging the cam with the receiver projection.

24. The method of claim 19, further comprising:

clamping the receiver in the loaded position using a clamping member provided on the actuator.

25. The method of claim 19, further comprising:

releasing a brake in the tape cartridge prior to mating a cartridge reel in the tape cartridge with a reel drive in the tape drive system.

26. The method of claim 20, further comprising:

releasing a brake in the tape cartridge using a brake release lever comprising a body portion and a pivot portion rotatably coupled to the actuator and engaging a stationary member such that as the actuator moves horizontally, the pivot portion of the brake release lever translates horizontally while a distal end of the body portion of the brake release lever translates horizontally and vertically.

27. The method of claim 20, further comprising:

applying a variable upward force in the vertical direction on the receiver.

28. A method of loading a tape cartridge into a tape drive system, comprising:

receiving a tape cartridge in a receiver;

rotating a drive shaft having a first gear and a second gear;

engaging the first gear with a loading gear on a loading assembly to actuate movement of the receiver from an unloaded position to a loaded position; and

engaging the second gear with a buckling gear on a buckler actuator to actuate buckling of a cartridge leader in the tape cartridge with a take-up leader in the tape drive system.

29. The method of claim 28, wherein the engaging the first gear with the loading gear to actuate movement of the receiver comprises:

engaging the first gear with an actuator to move the actuator in a forward direction as the drive shaft rotates through a first rotational distance.

30. The method of claim 29, wherein:

rotation of the drive shaft through a second rotational distance beyond the first rotational distance does not cause forward movement of the actuator.

31. The method of claim 30, further comprising:

after the rotation of the drive shaft through the second rotational distance, locking the actuator to prevent rearward movement of the actuator until the drive shaft is rotated in the reverse direction.

32. The method of claim 28, wherein the engaging the second gear with the buckling gear to actuate buckling comprises:

engaging the second gear with the buckling gear to translate the buckler actuator;

contacting the buckler actuator with a buckler mechanism to cause rotation of the buckler mechanism; and

coupling the cartridge leader with the take-up leader using the buckler mechanism.

33. The method of claim 32, wherein the translating the buckler actuator comprises:

translating the buckler actuator in a direction parallel to the axis of rotation the drive shaft.

34. The method of claim 32, wherein the buckler actuator contacts the buckler mechanism after the receiver has moved to the loaded position.

35. A tape drive system, comprising:

a motor;

a drive shaft adapted to be rotated by the motor;

a movable receiver for receiving and transporting a tape cartridge, the movement of the receiver being actuated by the drive shaft; and

a buckler mechanism for coupling a take-up leader of the tape drive system with a cartridge leader of a tape cartridge, the buckler mechanism being actuated by the drive shaft.

36. The tape drive system of claim 35, further comprising:

at least one linearly moveable actuator engaging the receiver such that as the actuator moves in a forward direction, the actuator effects movement of the receiver from an ejected position to a loaded position, the movement of the at least one actuator being actuated by the drive shaft;

wherein the drive shaft comprises a receiver gear comprising a plurality of gear teeth for engaging the actuator such that a first rotational distance of the drive shaft causes forward movement of the actuator and a second rotational distance of the drive shaft does not cause forward movement of the actuator.

37. The system of claim 36, wherein:

the drive shaft gear further includes a synchronizer tooth; and

the actuator includes a synchronizer tooth lock;

wherein as the rotating drive shaft rotates through the first rotational distance, the plurality of gear teeth do not engage the synchronizer tooth lock, and as the rotating drive shaft reaches the end of the second rotational distance, the synchronizer tooth abuts the retaining tooth lock, thereby preventing backward movement of the actuator.

38. The system of claim 36, wherein:

the drive shaft gear includes a plurality of gear teeth having a first width;

the actuator comprises a plurality of actuator teeth such that as the drive shaft rotates through the first rotational distance, the plurality of gear teeth and the synchronizer tooth engage the plurality of actuator teeth to cause forward movement of the actuator

39. The system of claim 38, wherein:

the drive shaft gear further includes a synchronizer tooth having a second width greater than the first width; and

the actuator further includes a retaining flange such that as the drive shaft rotates through the second rotational distance, the plurality of gear teeth bypass the retaining flange without causing forward movement of the actuator, and as the drive shaft reaches the end of the second rotational distance, the synchronizer tooth abuts the retaining flange.

40. The system of claim 39, wherein the retaining flange comprises a pair of flanges separated by a distance greater than the width of the plurality of gear teeth and being positioned such that the plurality of gear teeth pass between the pair of flanges as the drive shaft rotates through the second rotational distance.

41. The system of claim 40, wherein the drive shaft gear further comprises a lateral stability portion having a width smaller than the distance between the pair of flanges such that the lateral stability portion passes between the pair of flanges as the drive shaft rotates through the second rotational distance.

42. The system of claim 36, wherein:

the second rotational distance of the drive shaft drives the buckler mechanism to buckle the take-up leader with the cartridge leader.

43. The system of claim 35, further comprising:

a buckler actuator movable in a linear direction and driven by the drive shaft, the buckler actuator configured to actuate the buckler mechanism to couple the take-up leader with the cartridge leader;

wherein the buckler mechanism is rotatable about a buckling axis of rotation such that as the buckler actuator moves linearly, the buckler actuator contacts the buckler mechanism to cause the buckler mechanism to rotate about the buckling axis of rotation.

44. The system of claim 43, wherein:

the buckler mechanism includes a buckler gear; and

the buckler actuator includes a buckler actuator gear which mates with the buckler gear as the buckler actuator moves linearly, thereby causing the buckler mechanism to rotate about the buckling axis of rotation.

45. The system of claim 43, wherein:

the buckler mechanism includes a buckler cam; and

the buckler actuator includes a buckler member which contacts the buckler cam as the buckler actuator moves linearly, thereby causing the buckler mechanism to rotate about the buckling axis of rotation.

46. A tape drive system, comprising:

a motor;

a drive shaft adapted to be rotated by the motor;

a movable receiver for receiving and transporting a tape cartridge;

a means for translating rotational movement of the drive shaft into movement of the receiver from an ejected position to a loaded position;

a buckler mechanism for coupling a take-up leader of the tape drive system with a cartridge leader of a tape cartridge; and

a means for translating rotational movement of the drive shaft into rotation of the buckler mechanism.

47. The tape drive system of claim 46, wherein the means for translating rotational movement of the drive shaft into movement of the receiver comprises a linearly moveable actuator engaging the receiver such that as the actuator moves in a forward direction, the actuator effects movement of the receiver from the ejected position to the loaded position, the movement of the actuator being actuated by the drive shaft.

48. The tape drive system of claim 47, further comprising:

means for disengaging the drive shaft from the actuator such that a first rotational distance of the drive shaft causes forward movement of the actuator and a second rotational distance of the drive shaft does not cause forward movement of the actuator.